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To	Examiner Alan D. Diamond, Group Art Unit 1753, Mail Stop Amendment,		Fax 703-872-9306
From	Eunhee Park	+1 212 891 3577	+1 212 310 1677
Client/Matter No.	22122878-75		
Re	Application no. 10/759,341		
Pages (w/cover)	66		

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TRANSMITTAL FORM	Application Number	10/759,341
	Filing Date	1/16/2004
	First Named Inventor	Anthony C. Zuppers
	Art Unit	1753
	Examiner Name	Alan D. Diamond
	Attorney Docket Number	22122878-75

(to be used for all correspondence after initial filing)

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22122878-75

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**RECEIVED
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JAN 21 2005

In re Application of: Anthony Zuppero et al.

Art Unit: 1753

Serial No.: 10/759,341

Examiner: DIAMOND, ALAN D

Filing Date: January 16, 2004

Date: January 21, 2005

**TITLE: IMPROVED DIODE ENERGY CONVERTER FOR CHEMICAL
KINETIC ELECTRON ENERGY TRANSFER**Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**INFORMATION DISCLOSURE STATEMENT****S I R:**

1. In accordance with the duty of disclosure under 37 C.F.R. § 1.56 and in conformance with the procedures of 37 C.F.R. §§ 1.97 and 1.98 and M.P.E.P. § 609, attorneys for Applicants hereby bring the following references, which are listed on the attached modified PTO Form No. 1449 to the attention of the Examiner. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

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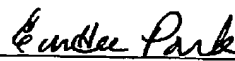

Amelia Finker

NYCDMS/434452.1

2. Applicants respectfully request that the following co-owned patents and co-pending applications be considered and made of record in the present application:

US Patent Nos. 6,114,620; 6,218,608; 6,222,116; 6,268,560; 6,327,859; 6,700,056; 6,678,305; 6,649,823; and US Patent Application Nos. 09/682,363; 10/218,706; 10/185,086; 09/631,463; 10/625,801; 10/052,004. The references cited in each of those patents and applications are listed on Form 1449 accompanying this information disclosure statement.
3. Copies of the references listed on the modified PTO form 1449 will follow under separate cover by first class mail due to their volume.
4. This information disclosure statement is being filed under 37 C.F.R. § 1.97(b)(3), before the mailing date of a first Office action on the merits.
5. No fee is deemed necessary with the filing of these documents. If a fee is deemed necessary, we authorize the Commissioner of Patents and Trademarks to charge Deposit Account No.: 02-0393.

Respectfully submitted,



Eunhee Park
Registration No. 42,976
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 1 of 1

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		Number-Kind Code ² (Known)			

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Attorney Docket Number	22122878-75

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Application Number	10/759,341
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First Named Inventor	Anthony C. Zuppi
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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		Filing Date	1/16/2004
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1753
		Examiner Name	Alan D. Diamond
		Attorney Docket Number	22122878-75

Sheet 1 of 1

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issu number(s), publisher, city and/or country where published	T ²
		HARRISON, P. et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, Institute of Microwaves and Photonics, University of Leeds, U.K., pp. 1-64	
		WEBER, et al., to X2 Electron Transfer Times in Type-II GaAs/AlAs Superlattices Due to Emission of Confined and Interface Phonons, Superlattices and Microstructures, Vol. 23, No. 2 (1998).	
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		HARRISON et al., Population Inversion and Gain Estimates for a Semiconductor TASER	
		HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level-Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	
		HARRISON et al., Room Temperature Population Inversion in SiGe TASER Designs, IMP, School of Electronic and Electrical Engineering, The University of Leeds	
		SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 7; No.22 (2001)	

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		ALTUKHOV et al., Towards Si1-xGax Quantum-Well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	
		SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and GaAs/AlGaAs Multiple Quantum Well Structures, Applied Physics Letters, Vol. 66, No. 25 (1995)	
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		AUERBACH, Daniel J., Hitting the Surface-Softly, Science, Vol. 294, pp. 2488-2489 (2001)	
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		BAUMBERG et al., Ultrafast Acoustic Phonon Ballistics in Semiconductor Heterostructures, Physical Review Letters, Vol. 78, No. 17 (1997)	
		BEDURFTIG et al., Vibrational and Structural Properties of OH Adsorbed on Pt(111), Journal of Chemical Physics, Vol. 111, No. 24 (1999)	

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		VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with the Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	
		BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TiO ₂ (110), J. Vac. Sci. Technol. A17(4) (1999)	
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		CHANG, Y.M., Interaction of Electron and Cold Plasma with Coherent Longitudinal Optical Phonons in GaAs, Applied Physics Letter, Vol. 80, No. 14 (2002)	
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		CHANG et al., Coherent Phonon Spectroscopy of GaAs Surfaces Using Time-Resolved Second-Harmonic Generation, Chemical Physics 251, 283-308 (2000)	
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		CHEN et al., Stimulate-Emission-Induced Enhancement of the Decay Rate of Longitudinal Optical Phonons in III-V Semiconductors; Applied Physics Letters, Vol. 80, No. 16 (2002)	

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Sheet ☐ of ☐**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

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		CORCELLI et al., Vibrational Energy Pooling in CO on NaCl(100): Methods, Journal of Chemical Physics, Vol. 116, No. 18 (2002)	
		FIERZ et al., Time-Resolved 2-Photon Photoionization on Metallic Nanoparticles, Appl. Phys. B 68 (1999); http://www.lip.physik.uni-essen.de/aeschlimann/abstract.htm#6	
		BEZANT et al., Intersubband Relaxation Lifetimes in p-GaAs/AlGaAs Quantum Wells Below the LO-Phonon Energy Measured in a Free Electron Laser Experiment, Semicond. Sci. Technol., 14 No. 8 (1999)	
		BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TiO ₂ (110), Journal of Vacuum Science & Technology A: Vacuum, Surfaces and Films, Vol. 17, Issue 4, pp. 1717-1720 (1999)	
		HARRISON et al., Maximising the Population Inversion, by Optimizing the Depopulation Rate, in Far-Infrared Quantum Cascade Lasers (2001)	
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		DAVIS et al., Kinetics and Dynamics of the Dissociative Chemisorption of Oxygen on Ir(111), J. Chem. Phys. 109 (3) (1997)	

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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		CHOI et al., Ultrafast Carrier Dynamics in a Highly Excited GaN Epilayer, Physical Review B, Vol. 63, 115315 (2001)	
		DIEKHONER et al., Parallel Pathways in Methanol Decomposition on Pt(111), Surface Science 409, pp. 384-391 (1998)	
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		DEMIDENKO et al., Generation of Coherent Confined Acoustic Phonons by Drifting Electrons in Quantum Wire; Semiconductor Physics, Quantum Electronics & Optoelectronics, Vol. 3, No. 4, pp. 432-437 (2000)	
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		GLAVIN et al., Generation of High-Frequency Coherent Acoustic Phonons in a Weakly Coupled Superlattice, Applied Physics Letters, Vol. 74, No. 23 (1999)	
		FRIEDMAN, SiGe/Si Thz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy-Hole Subbands, Applied Physics Letters, Vol. 78, No. 4 (2001)	
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		GLAVIN et al., Acoustic Phonon Generation In A Superlattice Under the Hopping Perpendicular Transport, United Nations Educational Scientific and Cultural Organization and International Atomic Energy Agency (1998)	
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		HARRISON et al., Theoretical studies of Subband Carrier Lifetimes In an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	

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		HESS et al., Hot Carrier Relaxation by Extreme Electron-LO Phonon Scattering in GaN	
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		KOMIRENKO, Sergiy M., Phonons and Phonon-Related Effects in Prospective Nanoscale Semiconductor Devices (2000)	
		HUANG et al., Observation of Vibrational Excitation and Deexcitation for NO(v=2) Scattering from Au(111): Evidence for Electron-Hole-Pair Mediate Energy Transfer, Physical Review Letters, Vol. 84, No. 13 (2000)	
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		KRAUSS et al., Coherent Acoustic Phonons in a Semiconductor Quantum Dot, Physical Review Letters, Vol. 79, No. 25 (1997)	
		LUGLI et al., Interaction of Electrons with Interface Phonons in GaAs/AlGaAs Heterostructures, Semicond. Sci. Technol. 7 (1992)	
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		MULET et al., Nanoscale Radiative Heat Transfer Between a Small Particle and a Plane Surface, Applied Physics Letters, Vol 78, No. 19 (2001)	
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		OGAWA et al., Optical Intersubband Transitions and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 88, No. 11 (2002)	

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		PLIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, Physical Review B, Vol. 58, No. 4 (1998)	
		PAGGEL et al., Quantum-Well States as Fabry-Perot Modes in a Thin-Film Electron Interferometer, Science, Vol. 283 (1999)	
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		QU et al., Long-Lived Phonons, Physical Review B, Vol. 48, No. 9 (1993)	

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		SMIT et al., Enhanced Tunneling Across Nanometer-Scale Metal-Semiconductor Interfaces, Applied Physics Letters, Vol. 80, No. 14 (2002)	
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		SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 78, No. 22 (2001)	
		TOM et al., Coherent Phonon and Electron Spectroscopy on Surfaces Using Time-Resolved Second-Harmonic Generation	
		TIUSAN et al., Quantum Coherent Transport Versus Diode-Like Effect in Semiconductor-Free Metal/Insulator Structure, Applied Physics Letters, Vol. 79, No. 25 (2001)	
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	1	WITTE et al., Low Frequency Vibrational Modes of Adsorbates, Surface Science, No. 1362 (2002)	
	2	VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with The Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	
	3	XU et al., Electrical Generation of Terahertz Electromagnetic Pulses by Hot-Electrons in Quantum Wells, Superlattices and Microstructures, Vol. 22, No. 1 (1997)	
	4	WANKE et al., Injectorless Quantum-Cascade Lasers, Applied Physics Letters, Vol. 78, No. 25 (2001)	
	5	ZHDANOV, Vladimir P., Nm-Sized Metal Particles on a Semiconductor Surface, Schottky Model, etc., Surface Science, SUSE 2931 (2002)	
	6	YEO et al., Calorimetric Investigation of NO and O adsorption on Pd(100) and the Influence of Preadsorbed Carbon, J. Chem. Phys. 106 (5) (1997)	
	7	ZAMBELLI et al., Complex Pathways in Dissociative Adsorption of Oxygen on Platinum, Nature, Vol. 390 (1997)	
	8	ZHDANOV et al., Substrate-Mediated Photoinduced Chemical Reactions on Ultrathin Metal Films, Surface Science 432 (1999)	
	9	ALTUKHOV et al., Towards Si1-xGex Quantum-well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	
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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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		HARRISON et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/	
		HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	
		HARRISON et al., Room Temperature Population Inversion in SiGe TASER Designs	
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		SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser	
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		SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and GaAs/AlGaAs Multiple Quantum Well Structures, Appl. Phys. Letter 68 (25) (1995)	
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		HYH et al., Methanol Oxidation of Palladium Compared to Rhodium at Ambient Pressures as Probed by Surface-Enhanced Raman and Mass Spectroscopies, <i>Journal of Catalysis</i> , Vol. 174 (2) (1998)	
		GUMHALTER et al., Effect of Electronic Relaxation on Covalent Adsorption Reaction Rates, <i>Physical Review B</i> , Vol. 30, Issue 6 (1984)	
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		PHIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, <i>Physical Review B</i> , Vol. 58, Issue 4 (1998)	
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		Number - Kind Code ³ (if known)			
		us- 6,119,651	09-19-2000	Anderson	
		us- 5,408,967	04-25-1995	Foster	
		us- 5,293,857	03-15-1994	Meyer	
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		Number - Kind Code ² (If known)			
		US- 4,590,507	05-20-1988	CAPASSO, et al.	
		US- 4,686,550	08-11-1987	CAPASSO, et al.	
		US- 4,849,799	07-18-1989	CAPASSO, et al.	
		US- 5,311,009	05-10-1994	CAPASSO, et al.	
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		AUERBACH, Daniel J.; "Hitting the Surface--Softly"; Science, 294, (2001), pp. 2488-2489	
		BONDZIE, V. A., et al.; "Oxygen adsorption ... gold particles ... TiO ₂ (110)"; J. Vac. Sci. Tech. A., (1999) 17, pp. 1717 and figure 3	
		BOULTER, James; "Laboratory Measurement of OH ..."; http://pearl1.lanl.gov/wsa2002/WSA2002talks.pdf	
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		CHIANG, T.-C.; "Photoemission studies of quantum well states in thin films; Surf. Sci. Rpts.39 (2000) pp 181-235	
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		CORCELLI, S. A., et al.; "Vibrational energy pooling in CO on NaCl(100) ..."; J. Chem. Phys.(2002) 116, pp. 8079-8092	
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		DAVIS, J. B., et al.; "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)"; J. Chem. Phys. 107 (3), (1997), pp 943-952	

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		DIEKHONER, L., et al.; "Parallel pathways in methanol... Pt(111)"; Surf. Sci. 409 (1998) pp 384-391	
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		GERGEN, Brian, et al.; "Chemically Induced Electronic Excitations at Metal Surfaces"; Science, 294, (2001) pp. 2521-2523	
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		HOHLFELD, J, et al.; "Electron and lattice dynamics ... optical excitation of metals"; Chemical Physics, 251 (2000) pp 237-258	
		HONKALA, Karoliina, et al.; "Ab initio study of O2 precursor states on the Pd(111)..."; J. Chem. Phys. (2001) 115, pp. 2297-2302	
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		HUANG, Yuhui, et al.; "Vibrational Promotion of Electron Transfer"; SCIENCE, VOL 290, 6 OCTOBER 2000, pp 111 - 113	
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		ISHIKAWA, Yasuyuki, et al.; "Energetics of H ₂ O dissociation and COads+OHads reaction - Pt."; Surf. Sci. preprints SUSC 12830, 27 April 2002	
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First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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		MITSUI, T., et al.; "Coadsorption and interactions of O and H on Pd(111)"; Surf. Sci., Article 12767, (2002)	
		MOULA, Md. Golam, et al.; "Velocity distribution of desorbing CO ₂ in CO oxidation on Pd(110)..."; Applied Surf. Sci., 169-170, pp 268-272 (2001)	
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	..	NOLAN, P. D., et al.; "Molecularly chemisorbed intermediates to oxygen adsorption on Pt ..."; J. Chem. Phys. 111, (1999), pp 3696 - 3704	
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		TEODORESCU, C.M., et al.; "Structure of Fe layers grown on InAs ..."; Appl. Surf. Sci., 166, (2000) pp 137-142	
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		WILKE, Steffen, et al.; "Theoretical investigation of water formation on Rh and Pt Surfaces"; J. Chem. Phys., 112, (2000) PP 9986 - 9995	
		WINTERLIN, J. et al.; "Atomic ...Reaction Rates ... Surface-Catalyzed ..."; Science, 278, (1997) pp. 1931 - 1934	
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		ZHDANOV, V.P., et al.; "Substrate-mediated photoinduced chemical reactions on ultrathin metal films"; Surf. Sci., V. 432 (#3) pp L599-L603, (1999)	
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		US-2001/0018923-A1	09-2001	Zuppero et al.	
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		TRIPA, C. Emil et al., "Kinetics measurements of CO photo-oxidation on Pt(111)," <i>Journal of Chemical Physics</i> , Vol. 105, Issue 4, pp. 1691 - 1696, July 22, 1996.	

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First Named Inventor	Anthony C. Zuppero
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Art Unit	1753
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Examiner Name	Alan D. Diamond
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Attorney Docket Number	22122878-75
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OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	10/759,341
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First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS

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		FRESE, et al., "Analysis of Current/Voltage Curves at n-Si/SiO ₂ /Pt Electrodes", J. Electrochem. Soc., December 1994, pp. 3375-3382, Vol. 141, No. 12, The Electrochemical Society, Inc.	
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Sheet 1 of 1

Application Number 10/759,341
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First Named Inventor Anthony C. Zuppero
Art Unit 1753
Examiner Name Alan D. Diamond
Attorney Docket Number 22122878-75

U.S. PATENT DOCUMENTS

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		US- 6,232,346	05-15-2001	DIMATICO et al.	
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OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.†	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T2
		BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, No. 5430, Issue of 13 August 1999, pp. 1042-1045.	
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		ENGSTROM, Ulrika and RYBERG, Roger, "Comparing the vibrational properties of low-energy modes of a molecular and an atomic adsorbate: CO and O on Pt (111)," Journal Of Chemical Physics, Vol. 112, No. 4, 22 January 2000, pp. 1959-1965.	

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		NIENHAUS, H et al., "Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium," Physical Review Letters, Vol. 82, Issue 2, January 11, 1999, pp. 446-449.	

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Sheet _____ of _____

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Sheet ☐ of ☐**U. S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-6,537,829	03-2003	Zarling et al.	
		US-6,444,476	09-2002	Morgan, Christopher Grant	
		US-6,399,397	06-2002	Zarling et al.	
		US-6,312,914	11-2001	Kardos et al.	
		US-6,251,687	06-2001	Buechler et al.	
		US-6,238,931	05-2001	Buechler et al.	
		US-6,159,686	12-2000	Kardos et al.	
		US-5,891,656	04-1999	Zarling et al.	
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		US-2003/0207331	11-2003	Wilson et al.	
		US-2003/0166307	09-2003	Zuppero et al.	
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		WO 01/28677A1	04-2001	Zuppero et al.		
		JP-02157012A	06-1990			

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First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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STATEMENT BY APPLICANT**

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Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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		G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/AlGaAs Superlattices, Applied Physics Letters, Volume 78, Number 22, Pages 3520-3522.	
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		G. SUN, R.A. Soref, J.B. KHURGIN; "Phonon Pumped SiGe/Si Interminiband Terahertz Laser"	

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		P. ARMOUR et al., "Hot-electron transmission through metal-metal interfaces: a study of Au/Fe/Au trilayers in GaAs substrates", Applied Surface Science 123/124 (1998), Pages 412-417.	
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		DE PAULA, A. et al, "Carrier capture processes in semiconductor superlattices due to emission of confined phonons", J. Appl. Phys. 77 (12), 1995 pp 6306-6312.	

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		US- 6,114,620	09-05-2000	Zuppero et al	
		US- 5,641,585	01-24-1997	Lessing et al	
		US- 5,593,509	01-14-1997	Zuppero et al	
		US- 4,793,799	12-27-1988	Goldstein et al	
		US- 3,694,770	09-1972	Burwell et al	
		US- 3,925,235	12-1975	Lee, Vin-Jang	
		US- 4,045,359	08-1977	Fletcher et al	
		US- 4,407,705	10-1983	Garscadden et al	
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